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Further Studies On Hydrogen-ion Concentration In Citrus Grove Soils—Ridge Section

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Station

In the summer of 1930, we had the privilege of making a general survey of the H-ion concentration existing in grove soils along the ridge section of the State. The primary object of the survey was to learn the approximate pH existing in soils of that section. A majority of the soils examined at that time indicated an H-ion concentration of slightly less than pH 5.0. Some tests were made in groves that had been limed too heavily fifteen or twenty years ago. These tests showed that the soil was still much less acid than the average, and that the trees, likewise, had not fully recovered from the effects of the lime treatments.

At this time I shall present some information that we have obtained during the past year on the effects upon the H-ion concentration which one may expect after applying certain materials to grove soils; also, some observations upon the tree condition. It should be pointed out, however, that tree response under the extreme drought conditions may not be indicative of the response one would obtain with average rainfall

conditions.

Since May, 1930, we have been able to follow very closely the change in H-ion concentration produced in the soil by applications of calcium carbonate in the form of Ocala lime-rock screenings. With the cooperation and assistance of Mr. C. G. Bouis, this study is being made upon the Wilson Grove which lies about five miles west of Fort Meade. It is doubtful if one could find another grove in the entire State where so much lime has been used recently.

This grove received prior to May, 1930, some basic materials. In November, 1927, about 1200 pounds of finely ground calcium carbonate was applied per acre. Basic slag was applied at the rate of about 1000 pounds per acre in 1929. Thus it should be remembered that at the time of the first tests, May 14, 1930, the soil had already received treatments with basic materials. Since May, 1930, the grove has received two applications of lime of 2200 pounds per acre each, the first in October, 1930, and the second in May, 1931. It may be mentioned here that this grove soil is heavier and of finer texture than the typical sand ridge soil. It has a higher water-table and perhaps contains considerably more organic matter than the higher sand soils.

The lime, of course, has had its greatest effect in the surface foot of the soil, since the difference in H-ion concentration is greater now than in May, 1930.

On May 14, 1930, the difference in the reaction at the two levels was about 0.2 pH; whereas, on December 22, 1931, the difference was about 0.9 pH. Such a wide variation as this usually indicates that a large quantity of basic material has been applied to the surface of the soil. Due to the dryness of the surface soil it was impossible for us to obtain the fourth foot sample on April 13, 1932. The difference in reaction between the two levels at this time is perhaps greater than one pH. Since Ocala limerock screenings were used; it is quite probable that the reaction will continue to rise due to the continuous action of the larger particles of lime. According to Mr. Bouis, the mechanical state of the material varied from that of the size of a pea down to a fine powder. The greatest change in the fourth foot has occurred since August 17, 1931.

We are unable to observe any detrimental effects upon the trees which may be ascribed to these applications of lime. The grove has suffered so severely from the recent prolonged drought that either beneficial

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Presented before the meeting of the Florida Horticultural Society, Gainesville, April 19, 1932.

Economic Factors of Importance in Citrus Industry Especially Referring to Production Costs

C. V. Noble

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In order to bring the citrus fruit situation clearly before us, the following quotation is taken from the 1932 Agricultural Outlook Report of the U. S. Bureau of Agricultural Economics:

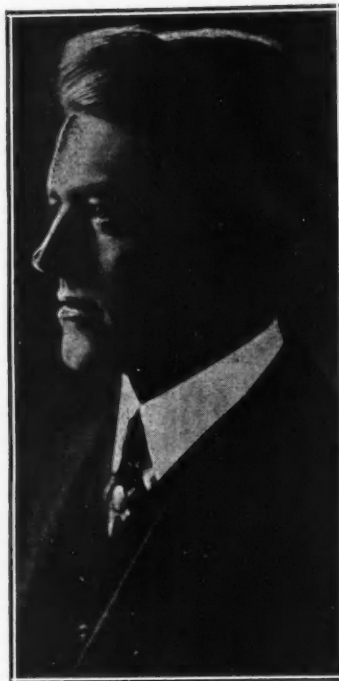
"The combined production of oranges and grapefruit has increased tenfold during the last 40 years and has been increasing at an average rate of about 6 percent per year during the last 10 years. By the fall of 1931 the total number of trees in orange and grapefruit groves was twice as large as it was in 1920."

The Federal Outlook Report also states that citrus production in foreign countries is rapidly increasing and that it will become increasingly difficult for this country to enlarge its citrus export trade. The recent tariffs on citrus fruits imposed by countries containing our leading export markets create a still greater sales resistance.

Statistics compiled by the Grove Inspection Department of the Florida State Plant Board show that the number of citrus trees in Florida groves increased from 11,356,414 in 1919 to 24,323,850 in 1931, or approximately 114 percent. This indicates that the Florida plantings have increased more rapidly than for the country as a whole.

In the face of this situation in the citrus industry, there appears to be no reason for changing the conclusion presented to this body two years ago that "Additional plantings of either oranges or grapefruit in Florida in the near future do not appear wise unless it is known that there is a shortage of specific varieties which are not already included in our non-bearing acreage".

With the prospects of a rapidly increasing volume of citrus fruit and the probability that consumer demand will not increase proportionately, the real hope of the future prosperity of the Florida citrus business seems to



C. V. Noble

rest upon methods of decreasing the costs. These costs may be roughly divided into three phases:

1. The costs of producing fruit.
2. The costs of picking, hauling and packing the fruit; that is, from tree to car.
3. The costs from packinghouse to purchaser; principally transportation costs.

These cost phases will be taken up in reverse order.

The costs of transportation to market are costs over which the individual growers has little control. It is only through the combined efforts of growers and shippers of citrus fruits that headway can be made in decreasing these costs. Much has already been accomplished by our Growers and Shippers League and its future accomplishments will depend upon the full cooperation of every grower

and shipper in this state. In a study of transportation rates (1) it was found that there was a lack of uniformity of rates from different sections of the country and that Florida growers were being unduly penalized. The present temporary reduction in the Florida citrus rates will go far toward bringing its rates into equilibrium with competing citrus producing areas. It is the hope that the present reduction may be made permanent.

The costs of picking, hauling and packing fruit, commonly thought of as the packinghouse costs, are much more nearly under grower control than the transportation costs. Even here, however, it will be difficult to make headway in reducing costs without the full cooperation of growers. In a study of this phase of citrus costs (2) it was found that there was a range of over 100 per cent in the cost per box between the lowest and the highest cost packinghouse, and that the principal factor affecting this cost was the volume of fruit handled per dollar of investment in packinghouse facilities.

In a study now in progress (3) it was found that citrus cooperative associations were handling about fifty per cent of the total volume of fruit being shipped from the shipping points where the cooperative packing plants were located.

Many of these associations could handle the total volume of fruit at their shipping point by full-time
(Continued on page 19.)

1. Brooker, Marvin A. A Study of the Cost of Transportation of Florida Citrus Fruits with Comparative Costs from other Producing Areas. Fla. Agr. Exp. Sta. Bul. 217:1930.

2. Hamilton, H. G. Cost of Handling Citrus Fruit from the Tree to the Car in Florida. Fla. Agr. Exp. Sta. Bul. 202:1929.

3. Hamilton, H. G. and Brooker, Marvin A. A Study of Cooperative Associations in Florida.

IMPRESSIONS

By the Impressionist

Last month's crop of liverwurst was sent to the printers before the Exchange annual election took place. It being unsafe to comment upon an Exchange election in advance, as unsafe as to comment similarly upon a Madison Square Garden boxing event, we have our say now.

The refusal of John Snively to allow his name to be used again was not unexpected in some circles. His tenure of the president's office was marked by a lot of hard work, some excitement, and was coincident with perhaps the most difficult marketing period within the history of citrus in Florida, and that is a very long period of time.

The selection of William Edwards of Zellwood as President of the big cooperative, if our personal approval counts, is highly popular. Each president of the Exchange, Dr. Inman, Dr. Ross, L. C. Edwards, Erle Wirt, J. C. Chase, John Snively, has left his impress upon the organization and upon the Florida industry. It will be our guess that William Edwards is due to impress his personality perhaps more strongly than any one of his predecessors, given equal opportunity.

The Plymouth Citrus Growers Assn. at Plymouth, of which William Edwards long has been the head and the guiding spirit, is one of the very strongest associations of the Exchange, and one of the greatest result producers. If he can do for the Exchange statewide organization some small part of what he has aided to do for this local unit, William Edwards will make his mark.

It's an old saying, If you want something done well, get a busy man to do it. William Edwards long has been one of the busiest men in Florida; and those things he has done right along seem to have been mighty well done.

He is the head of, or very active in, some twenty or thirty separate corporations or undertakings; and they have all done well. But busy as he is, inferally as he is, he always

has time to be pleasant. He can say "No," and make it stick, and still leave a better taste in your mouth than many men leave when they say "Yes".

And he says "No" pretty frequently. For he is Scotch, very Scotch. If possible, he is slightly more Scotch than Jim Morton.

He came to the U. S. A. from Scotland as a young chap, and got splendid business training later as secretary to the late John T. Pirie, one of Chicago's earlier merchant princes coincident with the original Marshall Field.

Something like thirty years ago when Mr. Pirie wanted a strong hand to handle certain of the Pirie investments in Florida, he sent William Edwards here; and here he has been ever since. He has played a big part in the development of Orange County. Has long been untiring in civic affairs and always active in his interest in better things. A high type of citizen, William Edwards.

With remarkable business instincts and distinguished ability, he remains quietly, but deeply religious. Yet with all the dignities which have come to him he always has been, and still is, Billy Edwards to his intimates; and fully one-third of the male population of Orange county consider him a personal friend. It takes a regular guy to do all the things this Edwards person has done, and still remain affectionately Billy to a whole flock of people.

The regard and affection held for him by the men who have worked under him for years, or who have graduated from his business tutelage, is perhaps the best index of his true value. Exchange employees are due to find that if they are doing their work properly and efficiently, William Edwards will back them to the limit; and vice versa, so to speak.

Previously in these columns we have referred to the now new Exchange president as William Edwards of Apopka, Zellwood and way sta-

tions. If you think that was simply by way of being funny, start out some morning to locate said Edwards at Apopka, Zellwood, Plymouth or wherever you will, without having made advance arrangements. You are likely to get the impression that he is all over everywhere at once, and that won't be far wrong. Now with Tampa added to his regular beat, he is apt to run up more mileage in any given month than Amelia Earheart.

The quick freezing process of which so much was expected now seems to be finding its place in the dressed poultry field. They clean, dress, and dismember poultry and pack in carboard cartons which are frozen solidly for seventeen seconds; and the product seems destined for successful popularity.

Weight for age, S. J. Sligh, beg pardon, the Honorable S. Jefferson Sligh, head of the well known S. J. Sligh Co., of Orlando, is just about the runningest thing in the industry. Being irritated about something Uncle Jeff recently announced for county commissioner; and did he run? And how! But he modestly insists that the speed he made in getting nominated was because the whole fruit crowd got in behind and pushed.

Will M. Traer, editor of the Winter Park Herald and Dr. Wilmon Newell, State Plant Commissioner, have been having a merry-go-round of a time on the subject of admitting California oranges into Florida. Giving consideration to the fact that the editor is not a practical fruit man, review of the exchange of editorials and correspondence impresses us that the militant newspaper man to date has the best of the arguments.

But we do not know much about controversies here in Florida. As a matter of fact we are only amateur controversialists. Now out in California when they do put on a public controversy they put it on properly. And the most recent phase of the long existing controversy between the California Fruit Growers Exchange and the Mutual Orange Distributors

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The Temple Orange And Its Culture

By Albert DeVane, Manager of Lake Placid Citrus Growers Assn.

The Temple Orange, as now propagated, came from an original tree growing on the Temple property in Winter Park, and was named after the late William Chase Temple. Another version of the origin of this variety is that the tree or variety is one of the old oranges of Jamaica, trees there bearing fruit almost identical with those which we grow under the name of Temple, with the exception of a weaker color.

With the introduction of the Temple Orange in 1917 through 1922 there were approximately one and a half million trees budded on rough lemon stock. To date there are about one hundred and twenty-five thousand trees in grove form of which only twenty percent are on the rough lemon stock, the balance of the original plantings have been destroyed or budded to other varieties.

The major part of my observations and activities with the Temple Orange have been with trees budded on rough lemon stock. Many of us are acquainted with the success of the Temple on sour orange root and some growers' success of those budded on Cleopatra Mandarin stock. On the other hand it is estimated that sixty-eight percent of the bearing Temple trees of the state are on rough lemon stock. To growers like ourselves, who have 150 acres of Temples in our planting on such stock, these have been until recently a liability rather than an asset. I had a persistent belief that it is possible to produce as good quality fruit of this variety on rough lemon as is grown on sour orange stock. The results of the last two crops seem to justify this belief. The primary undesirable feature of the Temple on rough stock is the tendency to dry at the stem end even long before maturity. My observation and experience with this condition has led me to the belief that this is to be handled through the positive control of the available nitrogen supply throughout the year.

Let me explain more fully my experience regarding what I call the

positive control of the available nitrogen supply which will entail many methods of fertilization and culture contrary to most practices. The Temple tree is a vigorous grower and will grow the entire year if sufficient plant food is available. The quality and texture of the fruit is moulded in the late summer and fall months. One trouble found in using an organic high in nitrogen during the heavy rains and maximum bacterial activities of summer are the uncontrollable effects of the nitrogen fed to the trees in the period of quality determination. It has been my observation that the tree should be given the maximum amount of nitrogen in the spring, pushing the tree and fruit as rapidly as possible in order to produce the large size preferable in the Temple. There is no danger in making the fruit coarse with the heavy application of nitrogen in the spring and, generally speaking, the size of the fruit is determined by growth made during the spring and until the latter part of May. Consequently, the largest percentage of nitrogen must be applied in the spring. That is, about eighty-five per cent of the total nitrogen from a nitrate source for the year should be applied between the first to the tenth of February, and the remaining fifteen percent in May from a nitrate and sulphate source. At the time of the May application phosphoric acid and potash are also applied, giving a yearly 1-½-1½ ratio. Acid phosphate and muriate of potash are used at this time. This is all the fertilizer the tree is given until the following February. All fertilizer applied to our plantings for the last three years has been from an inorganic source with the exception of one thousand pounds per acre of muck applied this past summer. It is going to be necessary to supply some type of very slowly available organic matter such as grasses, hay, or any organic matter very low in nitrogen where sufficient natural grasses or cover-crops cannot be grown.

Weather condition is another factor determining the quality of the fruit. Our last dry summer produced a much better quality fruit as a whole over the state than ever before seen. In my opinion this condition to a large extent was responsible

for the inability of the tree to take up nitrogen during the severe drouth of the late summer and fall. In summarizing the recommendations for fertilizer application on an average twelve year old tree the following program can be followed: Feb. 1—10th: 6 to 8 lbs. of nitrate fertilizer such as nitrate of soda, nitrate of potash, calcium nitrate. May 1—10th: either inorganic mixed good or materials bringing the plant food for the year up to a 1-½-1½ ratio.

The period of cultivation coincides with the spring application of fertilizer. A disc harrow is used to incorporate the fertilizer into the soil, stimulating root activity and growth as rapidly as possible as the trees are in a nitrogen starved condition. After the growth and bloom have started, further cultivation is not necessary under average weather conditions. The trees are usually hoed once in the fall of the year, but this practice has been abandoned in many cases.

Very little pruning is done in Temples. The limbs and twigs are so small that within a year they have fallen off and pruning is consequently only a secondary operation with us.

In conclusion may I state that by following the above practices we have produced good crops of quality fruit. This year we shipped 18,070 boxes of which sixty-four percent were U. S. No. 1 from our 150 acres of Temples. I believe that the Temple orange has possibilities of being one of the few varieties to compare or excel in prices paid for fancy fruit. In a prime stage, I dare say no other fruit can compare with a Temple in quality, individual flavor, aroma, texture, and appearance.

TO ATTEND FARMERS' WEEK

Dade City, Fla.—Pasco County will be well represented at Farmers' Week held at the University of Florida in Gainesville August 8-12, although they do not have a county or home demonstration agent, according to Miss Estella K. Aultfather. In a recent letter to the University asking for information about the week, reservations for 15 women were made.

Keep the laying flock in good condition this summer, and eliminate the poorer producers as soon as possible.

*Paper given before Florida State Horticultural Society at Gainesville, Florida, April 21, 1932 at their forty-fifth annual meeting.

Citrus Fertilizer Programs

Proposed and Issued by Agricultural Extension Service University of Florida

Fertilizer Nutrients

Chemical analysis shows that the average Florida citrus soil (virgin) is low in the essential fertilizer nutrients—nitrogen, phosphorus, and potassium. Citrus production has been obtained by adding these elements to the soil from time to time.

Ammonia Sources

The sources of ammonia fertilizers are divided into two general classes, namely inorganic and organic.

Inorganic Sources

Of the inorganic ammoniates, sulphate of ammonia and nitrate of soda have been most extensively used and have given satisfactory results in both field and experimental observation.

The other sources of ammonia, such as nitrate of soda-potash, calcium nitrate, urea*, ammonium phosphate, ammonium nitrate, urea-nitrate of lime, ammonia nitrate-sulphate mixtures have not been used so extensively as the first two forms. But when properly applied, field observations indicate that they may be used with satisfactory results.

Phosphoric Acid Sources

Superphosphate has been the most commonly used source of phosphoric acid in ordinary grove conditions. Due to the relatively low solubility of the untreated inorganic phosphates their efficiency as a source of phosphorus is not equal to that of superphosphate.

The organic sources of phosphorus, such as guano, fish scrap, and steamed bone meal are usually more soluble than the untreated inorganic forms. The efficiency of the phosphate fertilizer is usually in proportion to the available phosphate. These sources may be used when prices and conditions justify.

Potash Sources

High grade sulphate of potash has been the most commonly used source of potash under average grove conditions, but muriate of potash seems practically as good so far as it has been tested. Other sources of potash such as nitrate of potash, nitrate of soda-potash, sulphate of potash-magnesia, hardwood ashes, and tobacco stems should give satisfactory results.

Organic Matter

Most citrus soils in Florida are

low in organic matter. Moreover, it is generally recognized that organic matter increases the efficiency of the fertilizer as well as improves the quality of the soil. For this reason the college recommends that the grower produce as cover-crop on soil, or haul into grove at least 2 to 3 tons (dry weight) of coarse organic matter (grass, litter, legumes) per acre annually. It is not as essential to add the above amounts (annually) of organic matter to groves on heavy soil types or where cultivation is not practiced.

Fertilizer Application (1)

It is the usual practice to apply fertilizer to citrus according to the age and bearing capacity of the trees. This practice, however, is subject to criticism, because of the irregular bearing habits of trees, as well as the differences in size of the trees due to variations in soil, root stocks, etc. Studies of 150 groves of different

ages and varieties indicate that under ordinary conditions the spread of the tree or the tree size would be a more correct index of tree needs than age and bearing capacity. So the fertilizer programs suggested herein base the rate of application on the actual tree spread (diameter of top). This amounts to an annual application of approximately .13 to .16 of a pound of ammonia, .16 to .18 of a pound of phosphoric acid and .16 to .21 of a pound of potash per foot spread of tree. While heavy clay soils have a high phosphate fixing power, recent studies indicate that the sandy soils of Florida have a comparatively low fixing power. Therefore, the ratio of phosphorus to ammonia in the fertilizer used on such sandy soils could be lower than that for heavy clay soils without affecting yields. Field measurements indicate that the above ratio compares favorably with the

(Continued on page 24)

MIXED FERTILIZER PROGRAM (1)

Time of Application**	Kind and amount of fertilizer mixtures to be applied per foot of spread (or diameter of top)
SPRING—Jan.-Feb.	(1 lb mixed fertilizer, 5-6-3, or its equivalent
SUMMER—April-June	(1 lb 4-6-8 or equiv. to trees under 10 years of age (1 lb 4-6-10 or equiv. to trees over 10 years of age
FALL—Oct.-Dec.**	(1 lb 4-6-5 or equiv. to trees under 10 years of age (1 lb 4-6-8 or equiv. to trees over 10 years of age

MATERIALS PROGRAM (1)

Time of Application**	Kind and amount of fertilizer materials and mixtures to be applied per foot of tree spread (or diameter of top)
SPRING—Jan.-Feb.	($\frac{1}{4}$ lb nitrate of soda or 1-5 lb ammonium sulphate. Organic ammonia may be used when justified by prices and condition (FOR FURTHER TRIAL BY GROWERS ($\frac{1}{4}$ lb nitrate of soda-potash or nitrate of lime, or $\frac{1}{2}$ lb urea-nitrate of lime, or 1-12 lbs. urea or equivalent amounts from other sources. (a) Repeat the spring application of ammonia, reducing the amount—10-20% where spring cultivation is practiced, or 20-30% following a heavy legume cover-crop the previous year.
SUMMER—April-June	(b) 1 lb superphosphate (16%) or the equivalent. This may be reduced 50% in groves over 20 years old. Other sources of phosphorus may be used when justified by delivered unit price and conditions. (c) 1-6 lb sulphate or muriate of potash to trees under 10 years of age. (1-5 lb to older trees or trees believed to need more potash. (Other potash materials may be used in equivalent amounts.
FALL—Oct.-Dec.	(Repeat summer application (a) and (c)

MODIFIED PROGRAM (1)

Time of Application**	(Kind and amount of fertilizer mixtures to be applied per foot of tree spread (or diameter of top)
SPRING—Jan.-Feb.	(Use spring application in Material Fertilizer Program
SUMMER—April-June	(1 lb 4-8-8 or equiv. to trees under 10 years of age (1 lb 4-8-10 or equiv. to trees over 10 years of age
FALL—Oct.-Dec.***	(Same as the summer application

* For trees 1 to 6 years old reduce the amount of the regular fertilizer from 20% for 1 year trees to 5% for 6 year trees respectively. On heavy hammock soils the total amount of ammonia may be somewhat reduced.

** With each program of fertilizer practices, apply $\frac{1}{2}$ to $\frac{3}{4}$ the amount of the spring application of ammonia in August or September to nonbearing trees, to trees showing the need of ammonia, or where a heavy non-legume cover-crop is returned to the soil the current year.

*** The fall application of fertilizer may be reduced, or even omitted in northern part of citrus belt or where conditions seem to justify the practice.

(1) Where groves are consistently heavy producers, the potash should probably be increased. On the other hand, the ammonia should probably be decreased on soils high in organic matter.

*Although urea is an organic form of ammonia, it is made synthetically.

The Citrus Industry

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JOINT ADVERTISING CAMPAIGN

As the original sponsor of a joint advertising campaign for Florida citrus fruits, The Citrus Industry naturally is pleased with the movement inaugurated by the Florida Citrus Exchange and the Florida Citrus Growers Clearing House Association for a joint advertising campaign to be sponsored by these two organizations and by independent shippers not affiliated with either organization.

As long ago as 1920, the year in which The Citrus Industry was established, we espoused the cause of joint advertising of Florida citrus fruits. At that time the idea was not favorably received, either by the Florida Citrus Exchange or by independent shippers. The feeling of jealousy and keen rivalry which prevailed at that time operated to render such a suggestion unpopular. The fact that both the Exchange and those independent shippers now affiliated with the Clearing House are not only willing but anxious to join in a national advertising campaign is evidence of the better feeling existing among shippers and of the deeper recognition of the necessity for united action. Jealousy and rivalry have in a measure at least given way to a recognition of the fact that only through unity of action can the citrus trade of Florida hope to secure maximum return for Florida fruit.

The joint advertising campaign as planned calls for a minimum expenditure of \$200,000 under which the Exchange and the Clearing House would contribute \$100,000 each. Since these two organizations control the marketing of approximately eighty per cent of the Florida citrus crop, it is proposed that an additional \$50,000 should be subscribed by shipping agencies not affiliated with either of the two major organizations, providing a fund of a quarter of a million dollars for expenditure in a national advertising campaign. Such a fund would constitute a tax of less than one cent per box on the average citrus crop of Florida. This certainly is a small amount to expend upon advertising. A much more aggressive campaign could be waged were this amount doubled or

trebled, and the tax upon each box of fruit would still be a merely nominal sum when gauged by the benefits to be derived.

The Citrus Industry believes that a fund of a half million or even of a million dollars would return vast benefits to the grower, and once the plan is inaugurated, we believe that succeeding years would witness the expenditure of the latter sum, once the benefits of such a joint campaign were made plain to the growers and shippers. The main point, however, is that Florida's two outstanding citrus organizations have taken the initiatory steps toward putting such a joint advertising campaign into effect; that petty jealousies and trade rivalries have at last been subordinated to the general welfare of the industry and that these two organizations are now showing a disposition to work in harmony along lines for the good of the industry as a whole.

Citrus growers and citrus marketing agencies have too long diverted their energies in fighting among themselves. It is encouraging to note this new disposition to join forces and direct their energies to promoting the best interests of the industry through a common program for increasing consumption with its consequent betterment of prices.

AFTER QUALITY FRUIT

That many Florida growers are recognizing the necessity for producing fruit of highest quality and appearance is evidenced by the reports of certain fertilizer concerns and representatives of certain manufacturers of spray materials to the effect that their sales in recent months have far exceeded the record for the same period a year ago.

One of the most prominent of Florida fertilizer manufacturers is authority for the statement that the June sales of his company greatly surpassed the June sales a year ago, while the state agent of one manufacturer of spray materials is responsible for the equally encouraging statement that the sales of his company in Florida have shown consistent gains each month of this year as compared with the sales for the same months in 1931.

This is an encouraging sign, indicating as it does that in spite of the depression, wise growers are impressed with the desirability of producing the very best quality and the very best appearing fruit possible, since experience has shown that it is just such fruit which brings the highest price on the market and returns the grower the greatest profit on his investment and his labor.

It is noteworthy that in both of the cases cited above, the manufacturers are consistent and persistent advertisers, and that in one instance at least, the advertising is confined exclusively to The Citrus Industry.

John S. Taylor, one of Florida's outstanding citrus factors, has added the title of Democratic National Committeeman to his other well-known appendages.

The only good citrus grower is the grower of good citrus fruit.

CITRUS COMMENTS

—BY—

Charles D. Kime, Orlando, Florida

This department is devoted to furthering horticultural interests of Florida. Letters of inquiry, discussion or criticism will be welcomed

Production Fruit Quality

Citrus Fertilizing has been subject to greater variation during the past four or five years than at any time in the history of the industry. The reason being; first, a large number of newer materials are now available for the grower and farmer; second, the general depression has not skipped even the citrus grower. A review of the general practice of the past and of the present and speculating about the future offers quite an interesting study of the whole citrus business. Present needs are of more importance to us however, than future trends.

At last the total crop (possible) for 1932 is settled. Only at long intervals do we ever get so irregular a bloom as has occurred this year. Invariably it is tied in with a long period of dry weather as was the case this year. Irrigated groves that were in condition to bloom, young groves that did not suffer from excessive drying, all tried to put out the regulation SPRING bloom. But even this was interrupted this year by a large amount of winter growth which growth actually bloomed and set fruit in a small way. Later in the year on the breaking up of the dry weather we had as was expected by all old growers, a heavy "June" bloom. As a result of this irregularity we have now full sized fruit from last December bloom; medium sized fruit from spring bloom and in many cases a heavy setting of June bloom of small size. Altho it is not the rule we can find all three sizes on the same trees. Spring and June bloom have however occurred together to some extent at least on all groves.

The maturity of the present "crops", is a matter of speculation. It will be later than normal for the later bloom but if weather conditions remain favorable the probabilities are strongly in favor of the later blooms maturing earlier than we would expect—i. e., they will grow quicker and be subject to the same fall maturity conditions as earlier bloom and will therefore make up for

some of their late start.

The kind of fruit that is matured this year will depend on how the grove is treated during the year. That is, if the grove was in good condition to start with, the fruit that has set and started to "size up", is directly influenced by growth conditions since spring and only indirectly by conditions existing prior to that time. Fruit growth is distinct from amount of bloom that may have occurred. Bloom conditions are the result of grove care and weather conditions that occurred during the summer and fall of the previous year extending up until time for spring bloom to appear. It is too late to attempt to influence the potential bloom possibilities at or during spring growth. Applying stimulating fertilizers at that time does serve to bring out the bloom that is already possible, but up to date we have not been able to successfully and consistently change a leaf shoot to a bloom carrying shoot, that late in the season. After the bloom is set we have all of the summer and part of the fall months in which we can change its characteristics to suit our shipping requirements. It is largely our own fault then if we have poor quality for the variety with which we are dealing.

There are three distinct propositions in grove management that have to be dovetailed together. Our success as commercial growers depends on how well we succeed in doing this. The first and easiest is tree growth. The second and least understood is producing a tree condition that will cause the formation of bloom buds. The third and most important is growing the individual fruit crop after it is set.

In general the conditions that make for good tree growth are not optimum conditions for fruit growth or fruit bud formation. Yet that fact is not generally recognized and often it is denied. There is a rather general opinion throughout the citrus growing area that a tree in good vegetative condition will bear. Such an impression arises apparently because we

rarely see groves in poor condition carrying a crop of fruit. Yet a survey of just a few groves will disprove such an idea to anyone's satisfaction. There are plenty of good groves carrying no fruit or entirely too light a crop. They may be and often are in excellent shape vegetatively. A study of crop totals for a series of years will also illustrate a very great irregularity in bearing that is astounding, and often disconcerting. Peak loads are exceptional and it is the rule to have light crops rather consistently. In other words the importance of distinguishing between a vegetative stage and a bearing stage is not recognized. Yet we find plenty of good heavy bearing groves where by careful management a good crop is produced every year.

Some varieties of citrus unless especially urged are notoriously shy bearers. Examples are Navels, Kings and often Valencias. Others tend to be biennial (heavy one year and light the next). Examples are Marsh Grapefruit and often Duncans, Seedling oranges, Valencias, and tangerines. The Temple orange is about the only variety that can be depended on to bloom each year and later on it may prove more temperamental than at present, as plantings of this variety are still young.

The above examples of bearing tendencies are given to show that just because a grove is in good physical condition is no sign that it will put on a crop of fruit. Occasionally a grove in poor color and condition will show a good crop and the fruit will be of fine quality. In fact fruit from poor groves is often of superior quality and appearance. The difference, however, comes in lack of crop in such groves and the tendency for groves in poor shape to throw large amounts of dead wood. The most expensive way one could devise to get quality would be thru neglect. And no one would suggest that this method of producing quality fruit be tried. It is a matter of common knowledge that a neglected or mistreated prop-

(Continued on page 14)

The Basis of Plant Quarantines

**Wilmon Newell,
Plant Commissioner, State Plant
Board**

For sixteen years the horticulturists of Florida have had more or less contact with plant quarantines; for the most part, quarantines promulgated and enforced for their special benefit and protection. Only once during that time have they experienced material interference with their operations due to a quarantine upon their products for the protection of others and that was during the brief but successful campaign against the Mediterranean fruit fly.

We believe that it can be clearly shown that the quarantines enforced by your State Plant Board, both interstate and intrastate, have been efficiently administered and have been instrumental in protecting your industries against new pests and, consequently, against loss.

Despite this fact, there are some who have not clearly recognized the place which a quarantine properly has in horticultural advancement on the one hand, or the restrictions in its application on the other.

A fundamental principle which must always be recognized is that a quarantine must do more good than harm. Unless the protection which the quarantine affords is greater by far in dollars and cents than its cost of enforcement and its interruption of normal trade and commerce, it is untenable.

Another basic principle is that quarantines cannot be made use of for the purpose of reducing or eliminating commercial competition or interfering with interstate commerce—of building up trade barriers. The law is clear and specific with respect to this. Therefore, a plant quarantine can be enforced only for the protection of an agricultural industry against seriously injurious insect pests or plant diseases.

A recent experience has brought to light the interesting fact that there are a few citrus growers and others in Florida who actually believe that the State Plant Board can maintain a quarantine for the sole purpose of protecting citrus markets in Florida against competition from California citrus fruit.

This attitude was evidenced follow-

ing the announcement by the State Plant Board a few weeks ago that, after an exhaustive investigation, it had modified its embargo against California lemons and oranges to per-

Since 1915, substantial additions have been made to the knowledge concerning this disease: for example, that citrus fruit may be freed of all spores of the disease which may occur



Dr. Wilmon Newell

mit of shipment of these fruits into Florida under certain safeguards. As the history of this embargo and its modification illustrates the point we are trying to make, perhaps a discussion of it will prove of interest.

Florida's quarantine against California citrus fruits was placed on August 9, 1915, as a protection against the possibility of introduction into Florida of the brown rot of lemons and oranges.

on the surface of the fruit by immersion in a hot water bath of 115° Fahrenheit for two minutes. Much progress has also been made in the citrus packing houses of California in the improvement in sanitary methods of handling and packing the fruit. It is believed that the precautions under which California lemons and oranges will be shipped into Florida under the present arrangement are such as to reduce practically to the vanishing

point any danger of their carrying brown rot infection.

Bearing in mind that a plant quarantine can be maintained only on the basis of a real need for protection against an insect or disease and that it must satisfy that need in order to be valid, there remained, therefore, no sound basis upon which this embargo against California citrus fruit could be continued. The State Plant Board could not, even if it so elected, maintain a quarantine on the products of another state for the purpose of reducing competition.

A few individuals criticized the Board's action in repealing this embargo and substituting a restrictive quarantine, under which California-grown lemons throughout the year and oranges picked between May 1 and October 1, may be brought into Florida under precautions which eliminate the brown rot risk.

Any question as to what effect, if any, the Board's action may have upon the marketing of Florida's citrus crop is not germane. The cold fact is that the Florida State Plant Board cannot itself violate the law for the purpose of creating a market monopoly for Florida producers. Parenthetically, it may be stated that the Board and most growers and handlers hold the opinion that the shipment into Florida of California lemons throughout the year and of California oranges during the summer months will not materially affect, one way or another, the market for Florida citrus fruits.

In taking this action, the Board acted in accordance with the law and the facts. It did not ask California whether she would reciprocate by taking off her quarantine against Florida citrus fruits. The Board did no bargaining, for plant quarantines cannot be perverted by making them the subjects of trading for commercial advantage.

Certain insects and diseases, which are not known to occur in California, have heretofore occurred in Florida, and we assume, always, that California maintains a quarantine against our fruit only for the purpose of protecting her industry against these insects and diseases. If and when conditions are such in Florida as to make it apparent to the California authorities that her quarantines are not justified, then and in that event they will doubtless be modified or repealed.

A clear recognition of the fact that plant quarantines can be used only for protection against plant pests, and then only when the economic benefits of the protection are on the right side of the ledger, will

Citrus Fruit Trees Require Nitrogen

It is poor economy to curtail the use of nitrogen. Growers of citrus fruits who attempt to economize in grove expenditures by reducing or eliminating the use of nitrogen are making a great mistake. They have been warned frequently against this practice.

Some time ago Mr. E. F. DeBusk, the well known extension citriculturist, explained that heavy rainfalls during the winter causes the leaching out from the soil of vitally needed nitrogen. Unless this lack is made up by the use of a good fertilizer, such as Nitrate of Soda, fruit production will suffer.

Citrus fruit growers should not wait until the foliage shows a need for nitrogen. The trees should be given an ample supply in some quickly available form to enable each tree to bloom and set a heavy crop of fruit.

Experiments by the Florida Experiment Station indicate that the results will be about the same even though the amount of potash can vary from 3% to 10% and the amount of phosphoric acid from 3% to 25%. It was evident from these experiments, however, that when the supply of nitrogen varies the production varies accordingly.

Mr. DeBusk explained that this may be due to a phosphate and potash reserve accumulated in the soil without a similar accumulation of nitrogen.

He explained further that phosphoric acid may be omitted for a year and potash may be omitted in the Spring application without injury to the trees and without impairing the quality or reducing the quantity of fruit. But he says the trees must have ample nitrogen if they are to grow and set fruit.

Analyses have shown that citrus fruit production requires nitrogen, phosphorus and potash from the soil in about 4-1-5 ratio, while the ratio for tree growth is about 4-1-4.

do much to clear away confusion on these issues and will make for even more efficient and valuable results from quarantines when it is necessary to use them.

In conclusion, it should be pointed out that quarantine enforcement officials throughout the country have adopted as a fixed policy: (a) the discontinuance of quarantines when

It is most evident, therefore, that a profit-bringing crop can be expected only when sufficient nitrogen is fed to the trees.

For this reason every year more and more citrus fruit growers are using the American-made Nitrate of Soda. They find that its high percentage of quickly available nitrogen supplies the trees the plant food which they demand.

This Nitrate of Soda is unusually rich in nitrogen and about one pound will supply the amount of nitrogen required to produce a one hundred pound box of citrus.

One or more pounds of Nitrate of Soda per box capacity is not excessive for the spring application and it is not necessary to work this material into the soil for best results.

ASSISTANT HORTICULTURIST BEGINS WORK AT HOMESTEAD

Homestead, Fla.—Willard M. Fifield began work as assistant horticulturist at the Sub-Tropical Experiment Station here the first of July. This station is a branch of the Florida Experiment Station system. Mr. Fifield succeeds L. R. Toy, who resigned recently.

Mr. Fifield is a graduate of the University of Florida College of Agriculture, where he obtained his master's degree. He has been student assistant in horticulture in the Experiment Station at Gainesville for the last two years.

The Agricultural Extension Service of the University of Florida has been supplying the newspapers of Florida up-to-the-minute farming information and suggestions by means of a clip-sheet for the last 17 years.

While the poultryman may take a vacation this summer, he does not want his hens to do likewise. There is no profit in feeding hens which do not lay. The slackers should be culled and sold as meat.

they have served their purpose; (b) the modification of quarantines as rapidly as improvement in conditions justifies such action; and (c) abstention from placing quarantines except as a last resort, all to the end that they shall not interfere with trade and commerce unnecessarily, and that profits and prosperity may be enhanced rather than retarded.

CITRUS COMMENTS

(Continued from page 11)

erty is soon a liability of the worst kind. It takes but a year or two for such a grove to die back to a few straggly branches of no value even for regrowing into a grove again. Neglect is even more dangerous to a commercial grove but it is not a difficult matter to convert a non-bearing or light bearing grove into a heavy producer, if the variety under consideration is from a heavy producing strain.

Bearing cannot be considered an accident from any angle in which it is considered. It is vital to work up a bearing condition thru careful grove handling. If we can realize that producing a crop of fruit and bringing it to maturity is just as definite a series of events as those involved in growing a tree we will have made considerable progress in understanding the steps necessary in "producing commercial fruit." Growing a tree calls for one type of fertilizer setup and growing a crop of fruit calls for a modified fertilizer program. The two do not work together for any great length of time.

Growing a good crop of fruit is one thing but causing a bloom is something else. As soon as we can do the last we will be well on our way toward guaranteeing a fruit crop. Ultimately we will get there but at present causing a grove to bloom is a matter of individual experience and individual grove treatment and judgment. The man using the most experience succeeds the best. Once in a long while nature steps in and sets a bloom for us thru the medium of a long spell of dry weather as happened this year. But we cannot duplicate dry weather conditions. There is no other definite act of grove management that can be pointed toward nor is there any single known material that can be safely used as the medium thru which bloom may be secured. A careful balancing of all factors of grove management and fertilizing has actually achieved this result for some and can do so for others if properly used.

If we consider a crop of fruit as a distinct and separate proposition that must be worked into our grove setup we are ready to consider other factors than those connected strictly with tree growth. Fruit requires stamina, it must not rot nor injure easily, either on the tree or when shipped. It must stand up well after picking. It must have good size for the variety. In years of "large offs" it should be small, in years of "small offs" it should be large. It must be free from outside blemish, it must

have a high color that will hold until it is shipped. Inside, the fruit must be deep orange. The rag melting and not coarse or hard. The juice should be "sprightly" and well balanced for sugar and acid and never flat tasting. It must not dry out on the tree. That is some order for any fruit grower to fill, so when you put on top of that the desire for a good crop every year the "grove management" term immediately broadens out into "fruit management" as well.

The period during which fruit quality is more largely decided begins as soon as the fruit is set and runs thru its main growing period of summer and early fall, terminating when it assumes its maturity character and is considered ripe. The period of fruit quality seems to be decided in middle and later summer and early fall. These months for spring bloom would be July, August and September. For the large amount of "June" bloom occurring this year the period would run somewhat later. This means that now is the time to produce good quality, or to influence the fruit type. Good tree growth does not mean that the fruit is all right as later on the fruit will show up for itself and then it will be too late to

make a first grade fruit of the best quality, out of a second or third grade product.

CUT DISTRIBUTION COSTS

Roger W. Babson, the well known financial adviser and business forecaster, said recently: "The keynote to future prosperity is improvement in distribution methods. Distributors must cut costs and pass along to the consumers the saving already achieved in production. Progress in production has far outstripped progress in distribution. Our distribution system because of its high cost, is still the bottle neck which prevents the free flow of mass production which gets to the consumers. This business must attract that great potential market among the lower income classes to provide an adequate outlet for its huge producing capacity and to do this it must reduce costs. Authorities estimate that the avoidable waste in distribution is between \$8,000,000,000 and \$10,000,000,000 a year."

When a farmer neglects his soil he neglects his greatest asset.

Chaco

FERTILIZER

Time MUST Tell

Makes
healthier, better
trees while producing better
crops.



BLUE GOOSE NEWS

Monthly News of American Fruit Growers Inc.



Edited by The Growers Service Department

GRAIN EXPORTS AND THE CITRUS POSITION

One thing which in part accounts for the fact that citrus growers of the U. S. A., and of Florida more particularly, during the past year have fared relatively better than brother farmers of other states producing staple non-perishable food-stuffs is the difference of their relative positions in the matter of exports.

Meeting at Rome the International Institute of Agriculture declared, "the world market has almost ceased to exist". The true meaning of this statement of fact with its relation to American agriculture is found when examination is made of the shrinkage of exports to foreign countries from our great grain producing states.

For instance Kansas' share of this export trade fell from almost 24 millions of dollars in 1929 to less than 11 millions last year. Iowa's part was reduced from over 37 millions of dollars to a little over 17 millions at the same time. Indiana's share shrunk at the same time from almost 74 millions of dollars to a little less than 31 millions, an approximate loss to Indiana's producers of more than 40 millions of direct income without taking into consideration the depressing effect upon domestic markets of the unexportable surplus.

There was, of course, some shrinkage in the exports abroad of Florida grapefruit even though, conditions considered, they held up surprisingly well; but the shrinkage of such in comparison with the total crop production of Florida grapefruit has been an almost negligible factor in affecting the income of Florida growers if consideration is given to what has happened to these northern farmers. Florida oranges not lending themselves well to long distance transportation, and being little exported, suffered even less.

The American Fruit Growers Inc. being a pioneer in the successful export of Florida grapefruit, and possessing the largest and most important foreign sales organization, will continue undiminished its foreign

GOULDS GROWERS INC. MAKE FINE SHOWING

Goulds Growers Inc., at Goulds in Dade County, sending its products to market through the American Fruit Growers Inc., made a splendid showing during the past shipping season, it was brought out at the recent annual meeting of the organization.

This was partly due to the comeback staged by the citrus groves of that section, which now are reported to be in the best condition of any time since they were exposed to the destructive hurricane. It was also due in part to the considerable tonnage of tomatoes handled this past Winter and Spring, the lower East Coast then experiencing one of the most satisfactory tomato shipping seasons within the history of the industry there. The tonnage was large, and prices netted were extremely satisfactory to the growers.

A comparatively new operation in that section is in potato shipping, in which Goulds Growers Inc. this season played an important part. Combined tonnage of citrus, tomatoes and potatoes was quite considerable, and a very satisfactory showing was made.

At the annual meeting L. L. Chandler, W. M. Scott, A. B. Michael, R. B. Woolfolk and C. R. Pilkington were chosen directors. The following officers were elected: L. L. Chandler, president. R. B. Woolfolk, vice-president; A. B. Michael, vice-president; W. M. Scott, secretary and treasurer; G. D. Wing, assistant secretary and treasurer.

trade activities. There is no intent here to disparage export effort. However, it is self-evident that the citrus industry of Florida has been fortunate in that it has not to any great extent depended upon foreign markets during the past twelve months.

Carlot shipments of grapefruit by rail and boat in the U. S. A. have in ten years increased from 14,042 to 28,995 annually without including truck movement.

SERVICE TO INDUSTRY IS CONSTANT AFG AIM

By C. R. Pilkington

NOTE: Following are extracts from an address to associates of the Florida Division AFG at a meeting in Orlando on June 1. They are of interest to all inclined to give attention to better marketing.

The American Fruit Growers Inc. was organized in 1919. It did not come into being merely as a new organization in a competitive field but it was formed by its organizers for the definite purpose of meeting a recognized need in the industry for just such an institution.

Prior to its incorporation numerous well known individual brands were used in the marketing of various classes of perishable commodities, but an effective recognition of these brands was practically limited to the wholesale trade and a comparatively small number of retail dealers. Dependable as they were in their way they meant practically nothing to the average consumer buyer, and since each of them was limited to practically a single commodity, there was no brand or mark that could serve as a reliable guide to consumers applicable to the numerous classes of perishable products offered for sale in the markets.

It was the vision of the organizers of American Fruit Growers Inc. that perceived this lack in this industry, and it was their constructive thought that framed this organization to meet that specific need. Among the other factors which were given consideration, its program involved the following three distinct purposes:

1. By precept and example to give stimulus to the idea of producing high quality in perishable products rather than mere quantity.
2. The standardization of the grade and pack of all different classes of fresh fruits and vegetables on a proper basis that would be consistently maintained and that would justify the use on all of such commodities of a single nationally advertised trade

(Continued on page 2)

BLUE GOOSE NEWS

OF INTEREST to the citrus growers of Florida, each month, contained in four pages of paid advertising from the

AMERICAN FRUIT GROWERS INC.

Florida Division

Sixth Floor, State Bank Bldg.
ORLANDO, FLORIDA



CHAPMAN RESIGNS FROM VOLUSIA GROWERS INC.

L. F. Chapman has resigned as president of Volusia Growers Inc. at DeLand for the reason that his recent appointment as head of the State Prison Farm at Raiford, where he succeeds the late S. J. Blitch as superintendent, will occupy his entire time.

At the recent annual election of Volusia Growers Inc. he was succeeded by R. B. Woolfolk as president and general manager. Other officers chosen were C. N. Williams, vice-president; C. R. Pilkington, secretary and treasurer, and G. D. Wing, assistant secretary and treasurer. Directors are: R. B. Woolfolk, A. B. Michael, C. N. Williams, L. F. Chapman, Albin P. Crutchfield and C. R. Pilkington.

N. H. Harper again will have charge as packing house manager at DeLand during the coming season; and Albin P. Crutchfield will be actively on duty at the office there.

SERVICE TO INDUSTRY IS CONSTANT AFG AIM (Continued from page 1)

name which would serve as a reliable guide to both the buying trade and the consumer as to the character and quality of the goods so branded.

3. The creation of a marketing organization national in scope necessary for the successful accomplishment of the above program through the channels of which the necessary

volume to meet the anticipated demand could be gathered from all parts of the country and efficiently distributed to the markets of the nation and abroad.

The correctness of this program and the success with which the American has met it are matter of history. Out of it came the Blue Goose trade name, on which the American has expended more than a million dollars in advertising and sales development, and which has become without any question of doubt the most favorably known trade name used in the marketing of fresh fruits and vegetables, not only in this country but in foreign countries as well. The Blue Goose trade name is in fact now known around the world.

The physical marketing organization of American Fruit Growers Inc. is truly nationwide. It gathers its tonnage from every important producing district in this country, and through its shipping divisions which it maintains in the producing districts and its 225 terminal market sales offices as territorial distributing centers, it sells these commodities to more than a thousand cities in the United States and Canada of sufficient size to purchase them in carlot quantities. And it maintains a large export business as well. Its tonnage approximates 50,000 carloads per year and includes all classes of fresh fruits and vegetables normally handled in carlot quantities.

The American has every reason to be proud of the efficiency with which it has conducted its operations, as a result of which it promptly acquired and has consistently maintained a position of recognized and outstanding leadership in its entire field.

From the very beginning certain basic principles of business ethics and conduct have guided its operations.

Good faith, fair dealing and rigid integrity in all its relationships, it holds absolutely fundamental. It believes in the real unity of interest between a marketing agency and its grower client, and that truly meritorious service is the one sure key to permanent success. It builds its business on its own merits, by constructive and not destructive methods.

It recognizes the desirability of legitimate competition and the rights of its competitors, contractual and otherwise, and all its representatives are positively instructed that competitors must never be misrepresented nor unfair advantage be taken of them by false or misleading propaganda, or otherwise.

It believes that all laws and regulations governing the industry should be cheerfully complied with both in letter and spirit and it lends its influence to the promotion of all movements which it honestly believes to be for the best interests of the industry.

Its initial reception by fruit and vegetable producers in every section and by the wholesale and retail trade taken together with the recognition given to the Blue Goose trademark by the consuming public readily established the definite need for such an organization. Its ever continuing, healthy expansion and accumulating recognition and prestige testify to the correctness of the principles enunciated at the time of its inception, and to the fidelity with which adherence to those principles has been maintained.

CHOOSE BORLAND HEAD WEIRSDALE PACKING CO.

Harry L. Borland, Ocala, was elected president of the Weirsdale Packing Co. at Weirsdale in Marion County at the recent annual election of that organization, fruit from whose large and modern packing house is marketed through the American Fruit Growers Inc.

Jas. J. Taylor, Ocala, was named vice-president; Dr. E. B. Lytle, Weirsdale, secretary and treasurer; G. D. Wing, assistant secretary and treasurer. The directors are, H. L. Borland, Jas. J. Taylor, E. B. Lytle, and R. B. Woolfolk.

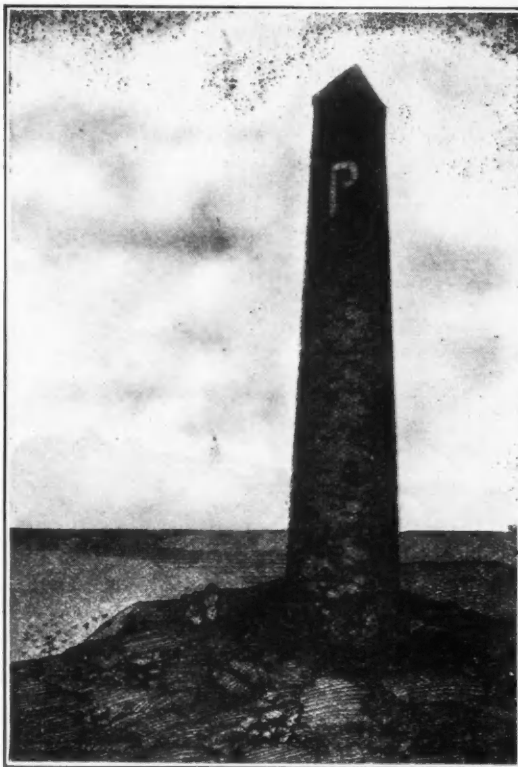
Dr. E. B. Lytle, who has managed the packing house since its organization, was congratulated by his associates upon the very excellent showing made during the past shipping season, in spite of the many difficulties which conditions presented. Dr. Lytle is one of the very successful citrus packing house managers of the state; and gives closest personal attention to every phase of packing operations while shipping is in progress.

TURN ATTENTION TO MARKETING PEACH CROP

Those employees of the Florida Division AFG who are accustomed to do so each season now have turned attention to peach marketing operations.

Allan W. Wilson and Stacey Z. White of the sales department are now in Fort Valley, Georgia in connection with the handling of Georgia peaches. The almost total failure of peaches in Georgia this season promises to make marketing operations

Designer's drawing of monument to late Admiral Peary to be erected this summer at Cape York, North Greenland. The expedition purchased and carried with it Blue Goose Florida grapefruit and Valencia oranges as its dietary aid to health, as told in the June Blue Goose News.



brief, and very satisfactory to those growers who will have any worth while quantity to ship.

W. L. Kolbe has left for Candor, N. C., where he will assist W. M. Scott in operations thereabout. The North Carolina peach crop is in good shape indications being for a good yield of good quality fruit. Mr. Scott will keep in touch with both the Fort Valley and Candor operations, giving his personal attention to the latter.

ROLAND E. STEVENS IS AGAIN NEW SMYRNA HEAD

Roland E. Stevens recently was re-elected president of the New Smyrna Packing Co. at New Smyrna, which sells its fruit in the markets through the American Fruit Growers Inc.

Directors elected at the annual meeting of the organization were, Roland E. Stevens, E. E. Neal, A. B. Michael, R. B. Woolfolk, C. N. Williams and C. R. Pilkington.

The officers of the corporation are, Roland E. Stevens, president; C. N. Williams, first vice-president; C. R. Pilkington, second vice-president; R. B. Woolfolk, secretary and treasurer;

and G. D. Wing, assistant secretary and treasurer. N. H. Harper the well known manager of the packing house was again chosen to manage it for the coming season.

Operations of the New Smyrna Packing Co. were extremely satisfactory during the past season, particularly so in view of the extremely short citrus crop in that immediate section, one of the shortest crops for several years.

BREVARD PACKING CO. HAS ANNUAL ELECTION

The annual election of the Brevard Packing Co. at Mims in Brevard County, which sends its pack to the markets through the American Fruit Growers Inc. chose the following directors: P. W. Roberts, A. B. Michael, R. B. Woolfolk, C. N. Williams and C. R. Pilkington.

The following officers were selected: P. W. Roberts, president; C. N. Williams, first vice-president; C. R. Pilkington, second vice-president; R. B. Woolfolk, secretary and treasurer; and G. D. Wing, assistant secretary and treasurer.

Frank P. Beatty, who has managed

the packing house since it was first opened was unanimously chosen to continue in its management; and received the sincere compliments of his associates upon the successful outcome of last season's operations.

FELLSMERE GROWERS ELECT MUDGE AS HEAD

The following were chosen directors of Fellsmere Growers Inc. at Fellsmere at the recent annual meeting of that organization, which sells its fruit in the markets through the American Fruit Growers Inc.: R. E. Mudge, G. F. Green, A. B. Michael, William E. Feazel, Sr., R. B. Woolfolk and S. D. Gaines.

The directors then reelected the following officers: R. E. Mudge, president; A. B. Michael, vice-president; R. B. Woolfolk, secretary and treasurer; G. D. Wing, assistant secretary and treasurer.

In the period of the past ten years carlot shipments of oranges and satsumas have increased from 46,628 to 92,507; and carlot shipments of mixed citrus fruits have increased from 1,592 to 14,646 yearly, excluding any movement by motor truck.

Adv.

The Truth About Marketing Fruit



The truth is that there is no royal road to success in marketing fresh fruit. It needs to be grown right, packed right, and sold aggressively.

There will be good seasons and bad seasons; but generally speaking widespread distribution, modern methods of merchandising, a large and capable sales force, good advertising and an established reputation for fair dealing combine to assure success.

Where there are ups there will be downs; and where there are downs there will later be ups. There is a wide territory in between, and it is the long-run average which counts.

American Fruit Growers Inc. is prepared to do the very best selling job possible for the growers it represents, with the largest and most aggressive selling force covering the greatest number of markets, a practical program of modern merchandising, and judicious advertising under the famed Blue Goose trademark.

Promising no more than that it will do the best it knows how, its continually expanding volume of business attests to its satisfactory service to an ever increasing number of growers of good fruit.

American Fruit Growers Inc.

Florida Division
Orlando, Florida

ECONOMIC FACTORS OF IMPORTANCE TO CITRUS INDUSTRY ESPECIALLY REFERRING TO PRODUCTION COSTS

(Continued from page 6.)

work or by employing two or three shifts at the peak of the crop movement, without increasing their packing facilities. Others would be warranted in increasing the size of their packing plants if the proper volume of fruit could be secured. There are many indications of a surplus of citrus packing plants in this state for the efficient packing of the present volume, or the expected increase in volume of citrus fruit during the period of use of these plants.

The phase of citrus costs over which the individual grower has the greatest control is the cost of production phase. In order to intelligently plan methods for reducing production costs, however, it is essential that the grower have detailed cost records of past experience with his grove. It is also desirable that he

THE CITRUS INDUSTRY

have access to similar cost results from other groves with which to compare his items of cost. It was with this idea in view that the Extension Division of the College of Agriculture started cooperative cost of production studies with a number of grove owners in Florida in the fall of 1930.

The average cost of production per cost of production per box of citrus box of citrus in 76 groves was 84½¢ or 5.7 cents per box more than they received for their fruit. This does not mean that there was an out-of-pocket loss on these groves, but it does mean that they were not paying the current rate of interest on their investment. If the interest charge were

omitted from the items of cost, the net return would be equivalent to approximately six percent on the investment.

There was a very wide variation in the costs and returns among the 76 groves. The yield of fruit per acre per grove varied from 22 to 497 boxes. In order to bring out the effect of yield per acre on costs and net returns, the ten groves with the highest yields were compared with the ten low yield groves.

Although the 10 high yield groves
(Continued on page 26.)

4. Brumley, F. W. and Briggs, W. R. Costs and Returns for Citrus in Orange and Lake Counties, 1930-31. Fla. Agr. Ext. Economist, Vol. 1, No. 10, October, 1931.

This season, with merit outweighing mere prices, old customers and a host of new ones have made our business exceptionally good ... thanks!

NOW LET'S LOOK AHEAD

IT'S time now to begin to look ahead to the Fall Application. Plan to use NACO Brand Fertilizers then for the same excellent results.

In the meantime, for filling in your requirements on young groves and early truck crops, get in touch with one of our field men, or write us for information or recommendations.

NITRATE AGENCIES COMPANY
1401-1407 LYNCH BUILDING
JACKSONVILLE, FLORIDA



Fruit Treating Process

We own the exclusive rights for the entire United States in the process of treating citrus fruit with a mixture of paraffin and gasoline or similar volatile solvent covered by

McDILL

United States Patent

No. 1,630,129

granted May 24, 1927.

To packers desiring to treat their fruit by this process we are prepared to grant the necessary permission on suitable terms. Applications will be considered in order of receipt.

Address all inquiries to

BROGDEN, RICKETTS & HAWORTH COMPANY

Box No. 338

Winter Haven, Florida

**Read The Citrus Industry for
News of the citrus industry**

FURTHER STUDIES ON THE HYDROGEN-ION CONCENTRATION IN CITRUS GROVE SOILS OF THE RIDGE SECTION

(Continued from page 5)

or detrimental effects of the lime is overshadowed by a lack of water. The grove at this time is in a poor condition, having lost considerable of its foliage. A great deal of the bearing wood is dead.

The trees are blooming heavily and do not seem to be in any worse condition than those elsewhere in that section. The rainfall has been about seven inches since September, 1931. This is considerably below the normal precipitation for this period. The precipitation over the analogous period last year was about twenty inches.

Professor Drew has made some interesting observations upon his groves that were limed about twenty years ago. These observations indicate that we may obtain better results with less acid soil conditions. The H-ion concentration in the unlimed soil is about pH 4.5, and there appears to be considerable dead wood present. The foliage of the trees on this soil is sparse and of a bronze color. The trees on the limed soil have more foliage and it is of a healthy green color. The reaction of these soils is about pH 5.0. This difference in condition is apparently due to substances which compose the soil solution and gives rise to the greater H-ion concentration in the unlimed soils, since the fertilizer and cultural treatments have all been alike in recent years. Thus, the soils that were limed are now quite acid but not so acid as the unlimed areas. The trees which at one time were almost killed by too much lime are now in a better condition than those which have never received any lime. A favorable soil condition evidently has been in existence for quite some time in order that the improved appearance of the trees in the limed soil may be so readily observed at this time.

There is unquestionably an optimum mean H-ion concentration for citrus growing in the ridge soils. The majority of plants in heavy loam soils containing considerable organic matter grow best at pH 6.0 to 6.5. I do not know where this optimum range of pH is located as regards the sand ridge soils. It can be learned only through very carefully conducted experiments. It would not necessarily be the same as those existing elsewhere in the State because of the variation of the materials in solution.

It has been established by those studying plant nutrition that differential absorption of ions by plants occur, and as a result there is a change

in the pH of the nutrient medium. Under alkaline conditions the change is toward the neutral point, whereas, under extremely acid conditions it is towards a less acid condition. Thus the pH is always a function of the ions in solution and the pH change is affected by the differential absorption of ions by plants. When the plant is grown under field conditions the complexity of the problem is further increased by the buffering and solvency action of the soil. The differential rate of absorption of ions varies also with the age of the plant. Thus it appears that the most we can do is to maintain a more or less definite range of H-ion concentration by the use of acidic and basic materials.

Practically everything that is added to the soil affects the H-ion concentration to some extent. There are a number of materials which may be used to greatly decrease the acidity; namely, limestone in various degrees of fineness, hardwood ashes, basic slag and, to a lesser degree, raw rock phosphates. These are materials that can be used in considerable bulk. In the application of bulky materials, the degree of fineness is an important factor to consider. The finer the particles of material used, the sooner will the complete effects be observed. In the case of coarse materials, the effects are slow and incomplete, there being a tendency perhaps to use too much material. Thus, hardwood ashes and basic slag are to be preferred to the coarser limestones where a definite degree of change in reaction is desired. Finely ground limestone will act more like the ashes and the slag.

Such basic nitrogen carriers as sodium nitrate and calcium nitrate will more or less maintain, under present grove practices, the H-ion concentration at about the same level as that found in wild or virgin soils, about pH 5.2. They can scarcely be expected to decrease the H-ion concentration of the sand soil above pH 5.3. Ammonium sulfate has an acid residual effect in the soil. However, when used on acid soils like those we have in the ridge section, it does not increase the H-ion concentration to the extent that some would have us believe. The experiments at Lake Alfred show that after a ten year period, the H-ion concentration is only about pH 0.5 lower in the ammonium sulfate plot than in the sodium nitrate plot. Of course, if the reaction of the virgin soil at the beginning of this experiment has been pH 6.0 or 6.5 the applications of ammonium sulfate might have been much more effective in increasing the H-ion concentration of the soil solution over this ten-year period.

Since the ultimate aim of decreasing the H-ion concentration of grove soils is to improve the quality of the fruit and lengthen the life of the tree, and since we know that excessive applications of lime are detrimental, we should act slowly in changing the pH of the soil. Until we can establish as a fact the contention that a reaction range of pH 5.5 to 6.0 has improved the quality of the trees and the fruit over that which is now obtained at about pH 5.0, and that this reaction can be maintained in general grove practices, one should not make large ap-

"Black Leaf 40"

Kills APHIS and THRIPS

This "double acting" insecticide has been the favorite spray material of successful citrus growers for the past 20 years. It not only kills Aphids and Thrips by direct contact, but also by nicotine fumes. This is an advantage not possessed by any non-poisonous, non-volatile insecticide.

Recommended By Experiment Stations
"Black Leaf 40" enjoys the endorsement and recommendation of leading growers, Agricultural Colleges and Experiment Stations and editorial writers throughout the country. Being highly concentrated, this reliable insecticide is economical to use as a little goes a long way. Full directions appear on every package. Sold everywhere.

Tobacco By-Products & Chemical Corporation
LOUISVILLE Incorporated KENTUCKY

KILLS BY CONTACT AND FUMES



plications of lime.

Recently our attention has been called to the effects produced by the applications of fruit residues, particularly grapefruit, from canning plants, to groves. A tangerine grove belonging to Mr. J. W. Sample of Haines City, Florida, has suffered considerable injury from the improper handling of this material. The injury was manifested by the dropping of leaves

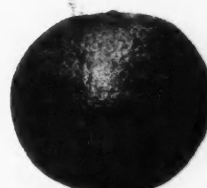
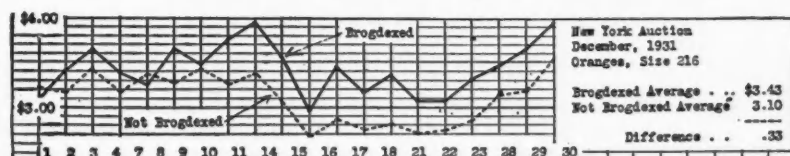
and dying of roots in the soil underneath the place where the load of residue was dumped. The material was permitted to remain in a heap for about one week before being scattered. Not only fibrous roots were killed but also those which were as large as one-quarter of an inch in diameter.

Investigations were made upon the soil activity resulting from this treatment which, at the time, cov-

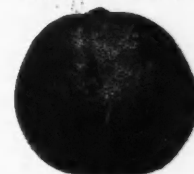
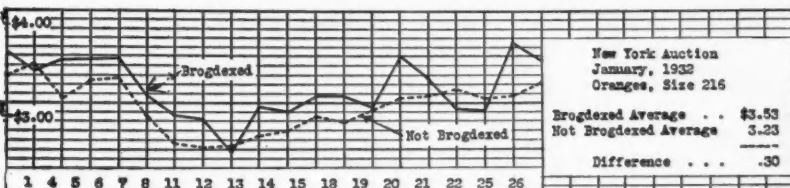
ered about five acres of a tangerine grove. The soil underneath where the load was dumped about ten days previous to our visit showed pH 4.0, while the reaction near the tree where no residue was placed showed pH 5.0, a difference of one pH. Where the material had been scattered, or had been on for a longer period of time, this difference was not so great. In

(Continued on page 24)

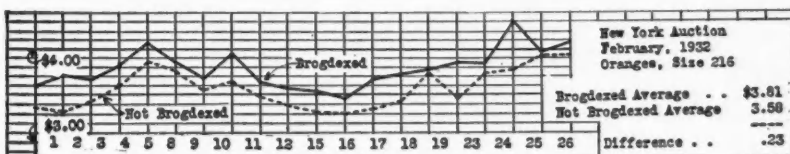
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BROGDEXED



NOT BROGDEXED



Originally same size,
picked the same day,
23 days old

Above is shown a 3 months' record of prices paid for oranges in the New York auction during the best selling season of the year. During this period 2688 cars of oranges were sold, enough to establish a fair average for the whole.

The better price paid for Brogdexed fruit means that its advantages are recognized by the trade. These

New York buyers would not have paid from 23 to 33 cents a box premium unless the value were there.

A consistent winner, Brogdexed fruit is more satisfactory in the hands of the dealer—stays sound and fresh looking so much longer than other fruit that the dealer has a chance to get rid of it all with little if any loss from shrinkage.

THE MARK OF
A GOOD PRODUCT



MORE MONEY FOR
THE SAME FRUIT

The Brogdex Trade Mark on a box of fruit has come to mean a new standard of appearance and keepability not approached by any other fruit. This reputation in the market has been established by nearly a decade of performance. Buyers recognize the advantages and are willing to pay well for them.

Appearance, better keeping qualities and being able

to ship with less refrigeration are factors that influence in a big way a grower's net return. Get these settled right and you will be surprised what a difference they will make in another season's operations.

There is a Brogdex Packer near you—it is to his interest to get you more money for your fruit and he will do it, too, if you give him a chance.

FLORIDA BROGDEX DISTRIBUTORS

B. C. SKINNER, President

DUNEDIN, FLORIDA

IMPRESSIONS

(Continued from page 7.)

is a humdinger. Open letters and broadsides from C. C. Teague, president of the bigger cooperative, and from A. B. Cowgill, secretary of the lesser co-op, are keeping things warm. Mr. Cowgill's public charge that the Exchange is trying to "hog the works," sets a sort of high mark in controversial courtesy as practised upon the Pacific coast.

Mutual Orange Distributors evidently wants to make it plain that its grower-members have no intention of being "absorbed" into the Exchange. For about twenty years, we'd say that fact has been about as plain as the nose on our own face; and that is pretty plain.

Faced with the need of economizing, housewives cut down on perishable purchases. Witness the fact that in the big markets of the country, total perishable sales were fourteen per cent less in the month of May than a year previous. This is figured in carloads, not in dollars.

The State Experiment Station at Gainesville recently issued a booklet concerning farmers' cooperative associations in Florida. It lists in a classified manner 346 such associations organized here since 1894 in citrus, truck and livestock. Most all of these came into being since 1909 when the first Cooperative Act was passed to enable such organizations. Sitting down to study this we discover that by 1930 177 of these associations were defunct or non-operating, and 169 were surviving. Evidently there is a high mortality rate among farmers' cooperatives in Florida; but the manner in which these statistics are compiled does not make it possible to discover what is the average life of such in Florida. At that, the mortality rate of cooperatives in Florida is much lower than that for the country as a whole, doubtless due to the inclusion in these figures of all the local associations of the Florida Citrus Exchange. That organization rates as one of the long-lived and very successful cooperatives of the country.

California is commonly, and mistakenly, spoken of as the home of farmers' cooperatives. Few realize that the Florida Citrus Exchange is next to the California Fruit Growers Exchange one of the oldest of such organizations in the country in point of continuous existence. Most all the other California cooperatives have flunked and been reorganized at

one time or another. and some of them have been reorganized so frequently it has been hard to keep track of them. Sunmaid Raisin Growers is one such.

In point of fact, we believe Ohio and Nebraska can show the most successful record for true farmers' co-operatives, if we eliminate the two big citrus organizations. And, to us, it has been somewhat notable that the successful co-ops of Ohio and Nebraska in recent years have been extremely chary of affiliating with, or officially approving, that school of thought which aims to make water

run uphill.

It is our observation that farmers' cooperatives generally speaking are unsuccessful in the proportion that they are organized by professional organizers, and successful in the proportion that they are organized and manned by the farmers themselves.

Still the federal and state governments continue numerous professional organizers of cooperatives on their payrolls; and quite a few have been able to make good livings over a period of years while operating entirely

TOMORROW'S PROFITS

They Must be Planned Today



What your crops produce in dollars and cents at marketing time will depend largely upon what you do today. Profits will be determined by quality crops . . . quality crops will depend upon plant-food.

Few soils can grow profitable crops in today's markets without the help of plenty of plant-food . . . balanced plant-food . . . a complete fertilizer. Skimping on fertilizer or using straight materials in times like these is running a risk. In results the practice has proved itself in most cases to be just another unsuccessful experiment.

The profits your crops bring have a direct relation to the quality of the fertilizer you use in growing them. Armour's BIG CROP Fertilizers are made with that idea in view. For 37 years their use has proved their quality-making ability. Plan tomorrow's profits by the use of a standard, demonstrated brand of Armour's BIG CROP Fertilizer. Consult your local dealer today.



Our field representatives will gladly make recommendations based on the requirements of your crops.

**ARMOUR'S
BIG CROP
FERTILIZERS**
ARMOUR FERTILIZER WORKS
JACKSONVILLE, FLORIDA

July, 1932

on their own.

Failing to obtain an adequate rate from one of the big companies for the power required to operate their large tissue-wrap printing plant, so Don Bishop tell us, the Crown Paper Co. at Sanford is considering installing a small Diesel engine to make the electricity for their own power and lights. Recent improvement in such engines promise to revolutionize the manufacture of electric current on a small scale.

M. M. Lee, long editor of the Winter Haven Chief and a citrus grower of much experience, thinks we here in citrus Florida don't know how well off we are. Witness his recent editorial comment following his return from a northern trip: "If you folks just knew how well off we are in Florida, you would stop lots of your blamed growling."***While our citrus growers have had hard scratching to make both ends meet we can congratulate ourselves that we haven't had

THE CITRUS INDUSTRY

the stony row to hoe that the northern farmers have had and still have. They seem to have plenty of stuff to sell but the trouble is it has cost them more than they can sell it for on the market, so their books show red on about every page. They are lucky in the fact that they seem to have plenty to eat. So most of them are getting along about as we are here, but groaning and growling louder than we are, which is certainly useless. In the manufacturing towns and cities conditions are sure nasty. Plenty of people out of work; some others working just a few days now and then for scant wages. In fact, they are doing well, all things considered, if they keep body and soul in the same boat while she drifts downstream."

The roots of Bahia grass will grow as much as five feet in five weeks during the summer rainy season. Dr. W. A. Leukel, agronomist at the Florida Experiment Station, who has

Twenty-three

made a special study of Bahia grass roots, has found that they frequently grow eight feet long.

You'll Enjoy a Trip to

Farmers' Week

At the College of Agriculture

GAINESVILLE, FLA.

AUGUST, 8-12, 132

Come and Bring the Family

Interesting Courses in Practically all Farming and Rural Home Subjects. Board and room may be obtained in University of Florida Dormitories at \$1.10 a day. There will be no other charges while you are at Gainesville.

Talk it over with your county or home demonstration agent or write

AGRICULTURAL EXTENSION SERVICE

Gainesville, Florida

The Skinner Washer



Showing Delivery End
Motor or Belt Drive

The Skinner Washer is the only mechanical washer so far made that will thoroughly clean both stem and blossom ends of flat fruit. The ordinary washer tends to rotate the fruit on one axis and leaves a dirty spot on the stem and blossom ends of flat fruit or on any two opposite spots on round fruit.

The principal of operation of the Skinner Washer is that of a cylindrical brush revolving toward a reciprocating rubbing or turning board. These rubbing boards are covered with ruffles and have a straight-line motion forward and back, parallel to the revolving brushes and directly over them. The straight-line motion of these rubbing boards imparts an oscillating motion to the fruit as it slowly moves down the sloping run-ways.

Another advantage is that the rubboards are kept close to the brushes which is necessary in handling tangerines.

These two motions produced by the brushes and rubbing boards result in constantly changing the axis about which the fruit rotates so that it comes out thoroughly cleaned.

Patented

SPECIFICATIONS

Length Washer	- - -	12 ft.	18 ft.
Inlet height	- - -	45 3/8"	51 3/8"
Overall length	- - -	13' 8 1/2"	19' 9 1/4"
Overall width, 2-runway washer		25"	
Overall width, 4-runway washer		46 1/4"	
Overall width, 6-runway washer		67 1/2"	

H.P. Required, 2-runway, 12-18 ft. washer 1 1/2 to 2 H.P.

H.P. Required, 4-runway, 12-18 ft. washer 2-3 H.P.

H.P. Required, 6-runway 18 ft. washer 4 H.P.

This year's washers have been improved by adding a quick change device which changes the angle of the rubbing boards to suit the kind of fruit being run. This convenient device moves a pair of boards at one time from one point and while the machine is in operation.

Another improvement is a split bronze bearing in place of the sleeve bearing on which the rubboards move back and forth. This type of bearing is much more durable.

Gears are machine cut and are mounted in oil filled gear boxes. Bearings are standard bronze bushings. Ball bearings take the end thrust caused by the slope of the machine. Except in the gear boxes all other bearings are of the oilless type which simplifies lubrication.

Put your washing job up to a Skinner Washer and it will be well done.

FLORIDA CITRUS MACHINERY COMPANY

B. C. SKINNER, President

DIVISION FOOD MACHINERY CORP.

DUNEDIN, FLORIDA

FURTHER STUDIES ON THE HYDROGEN-ION CONCENTRATION IN CITRUS GROVE SOILS OF THE RIDGE SECTION.

(Continued from page 21)

fact, tests that were made on the areas where it was first applied to the soil, showed the reaction to be about pH 1.5 less acid than where no residue was scattered. The residue, as it arrived at the grove and was dumped, showed pH 3.9.

Total acid determinations were also made upon the same soil samples using one hundred cubic centimeter aliquots of an extract made with normal potassium chloride solution. The total acid concentration was about ten times greater in the soil underneath the places where material was dumped than in the other areas. In the part of the grove where the material was first applied and the pH found to be high—about 6.5, the total acids were even lower than in the check samples. In other words, the pH determinations and the total acid titrations show about the same thing: namely, a very high acidity at first, followed by a gradual decrease until a lesser degree of acidity exists than in the untreated areas. This indicates that the residue is basically less acid than the soil upon which it was placed.

While taking the samples for acidity studies, it was observed that the soil underneath where the residue was dumped was much warmer than that of the check area out near the trees. Thermometers were placed in the soil to a depth of eight inches and the exact temperatures were obtained. The check soil showed a temperature of about 21° C. (68.2° F.); whereas, the temperature of the treated soil showed 35° C. (95° F.), 14° C. warmer. The presence of citric acid and the formation of acetic acid no doubt are the causes of the high acidity found in the soil. The oxidation of the sugars and acids account for the higher temperature of the soil underneath the treated areas.

Since making these tests, a number of growers have been consulted who have used canning plant residue on their groves. Practically all of them have observed similar injurious effects where too much was applied at one time. All stress the fact that the material should be scattered immediately after being dumped on the soil and that about one truck load should be applied to the equivalent space of four trees. The material was being applied on the grove belonging to Mr. Sample at about the rate of one truck load to the equivalent of one or two trees.

THE CITRUS INDUSTRY

CITRUS FERTILIZER PROGRAMS (Continued from page 9)

best grove practice.

For a large part of the citrus belt experimental data and field observations indicate that the most reliable results can be obtained under general conditions with three applications of ammonia per year—spring, summer, fall. But due to the retaining power of the soil for phosphates and potash there is apparently little to be gained by adding the phosphoric acid and potash three times per year.

The fertilizer should be applied evenly over the soil surface, as far as the roots extend.

Tabulated Fertilizer Programs For Bearing Citrus Groves*

Local conditions, such as moisture, soil type, cover-crop, variety, root-stocks, etc., play an important part in the behavior of citrus trees toward fertilizer treatments. Therefore, the fertilizer programs herein set forth are subject to local modifications.

The following fertilizer suggestions embody three programs, namely a mixed fertilizer program, a materials program and a modified, program, each of which is complete in itself.

- (1) (a) Analysis of Citrus Fruits, by Pickel and Earle—Fla. Station Bulletin 17.
- (b) The Cultivation of Citrus Fruits, by H. H. Hume—MacMillan Company.
- (c) Analysis of Grapefruit, by R. W. Ruprecht—Unpublished data.
- (d) Citrus Fertilizer Studies at Lake Alfred, by R. W. Ruprecht—Citrus Industry, October, 1931.
- (e) Citrus Fertilizer Experiments, by Collison—Fla. Exp. Sta. Bulletin 154.
- (f) The Accumulation and Availability of Phosphates in Old Citrus Grove Soils, by O. C. Bryan—Ready for the press.
- (g) The Influence of Different Ratios of Phosphoric Acid and Potash in Complete Fertilizers upon Growth and Yield of Citrus Trees, by B. F. Floyd, Florida Experiment Station Annual Report 1919.

Farmers and farm women deserve a vacation every summer. They can get it cheap and along with a lot of helpful information about modern farming and homemaking at Farmers' Week to be held at the University of Florida, Gainesville, August 8-12.

BEEKEEPERS OFFERED

SPECIAL SHORT COURSE

DURING FARMERS' WEEK

Gainesville, Fla.—A special short course for beekeepers will be held during Farmers' Week, August 8-12, at the University of Florida here. According to R. E. Foster, apiary inspector with the State Plant Board, the short course will begin Tuesday, August 9, and last for two days. Then the next two days will be devoted to the annual meeting of the Florida State Beekeepers' Association.

The short course will present talks and lectures about all phases of beekeeping, giving special attention to instruction for beginners. A number of the major honey producing plants will be on exhibition, along with samples of honey which the bees produced from them. Throughout the short course special attention will be given to questions asked by the beekeepers.

At the annual association meeting officers will be elected and other important business will be transacted. Widely known beekeepers and specialists in beekeeping will be on program which tentatively contains talks about honey plants, forest fires, bee diseases, honey production, marketing of honey, and other important beekeeping topics.

All facilities of the University will be opened to the visitors. Room and meals will be the only cost, and that is \$1.10 per day. Modern camping facilities and a nursery for children will be provided free. Detailed information can be obtained from county or home demonstration agents or the Agricultural Extension Service, Gainesville.

Cowpeas and soybeans planted during the latter half of July usually reach the stage for hay during the fall dry period.

Conditioned 200 Mesh

Acme Dusting Sulphur **Free Flowing – Non Lumping – Non Caking**

Don't Rely on Sulphur of Unknown Fineness If You Want Results

RUST BRAND

Tests 99% Passing 200 Mesh – 97½% Pure

Southern Acid & Sulphur Co., Inc., St. Louis, Mo.
R. W. A. Duncan, State Repres., Frostproof, Fla.

Important Advance In Preparation of Citrus Juice Made

Gainesville, Fla.—The problem of preserving extracted citrus fruit juices is one step nearer solution as a consequence of experiments recently conducted at the Florida Experiment Station by workers of the Florida Station and the United States Department of Agriculture. The results of the tests were announced today by officials of the two cooperating organizations, and are of particular interest to those attempting to find ways to keep prepared citrus fruit juices frozen or on cold storage.

The tests have shown the cause of the bitter taste developed in prepared the way to its prevention. They have citrus juices on standing, and point shown the causes of changes in color and a method of preventing settling or rising of solid particles in the juices.

The bitter taste was found to be due to certain compounds called glucosides are present in the inner peel, the veins, and the walls lining the sections of the fruit. When the juices are extracted in such manner that the parts containing these glucosides

are little disturbed, the bitter taste does not develop. The citrus oil in the outer peel does not cause the bitter taste.

As the fruit matures the quantity of glucosides contained becomes less, and mature fruit is more desirable for juice extraction. The amount of glucosides contained varies to a certain extent with the variety of fruit.

The change which takes place in the color of the juice has been traced to citrus oil. The addition of this oil to the juice mixture causes a change in color from the original to lighter shades. Since color of the right shade is distinctly worth while in high grade juice, the blending of tangerine juice with sweet orange juice is suggested. Earlie work at the Experiment Station has shown this to be one of the most satisfactory citrus juices known.

Citrus juice consists of solids suspended in a liquid. The more completely the solids remain in suspension over a long period of time the better. It has been determined that the rate of settling of the solids appears to be definitely affected by the

size of the particles, the smaller particles remaining in suspension longer. Also it has been determined that the presence of small amounts of citrus oil causes the particles to remain in suspension longer. Sufficient amounts of citrus oil will cause all the particles to rise.

The Florida Experiment Station has recently published a report of this work, which was done by Dr. A. F. Camp, Dr. A. L. Stahl and Dr. L. W. Gaddum of the Station staff and Dr. Hamilton P. Traub of the United States Department of Agriculture.

OVER NINETY PERCENT BABY CHICKS RAISED

Crestview, Fla.—Among the poultrymen of Florida who have raised over 90 percent of their chicks this year are two Okaloosa County farmers, reports County Agent J. W. Malone.

Fred Griffith, Crestview, purchased 524 White Wyandottes this spring and has raised 495 of them, giving about 6 percent mortality. P. E. Robinson, Laurel Hill, has lost 24 out of 330 for a mortality of about 7 percent. Both of these men followed the plan outlined in the statewide Grow Healthy Chick Campaign.

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CONTAINS complete information on ETHYLENE—the magic gas which hastens ripening of matured fruits. Learn how to profit with it. Ethylene increases profits, reduces loss, saves time. Write for your copy of "Ethylene for Coloring Matured Fruits and Vegetables" today.

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Fertilizer Costs Can Only Be Measured By Effect On Crops

The cost of fertilizer per ton may mean nothing at all, but the result of having used the fertilizer just suited to your requirements means everything.

That's why so many of our customers are those who have purchased their fertilizer requirements from us year after year.

They know that our field experts will advise them honestly and expertly as to the sort of fertilizer required to secure the best results for their particular grove.

They know that this company never sells anyone with the thought in mind that that single sale will conclude our relationship. With us the initial sale is simply the entering wedge to a long and pleasant relationship builded upon a mutual confidence and respect.

If you don't know us as well as you should we will both profit measurably by becoming better acquainted.

West Coast Fertilizer customers
raise better fruit.

West Coast Fertilizer Co.
303 Zack Street Tampa, Florida

CLASSIFIED

Advertisements

The rate for advertisements of this nature is only five cents per word for each insertion. You may count the number of words you have, multiply it by five, and you will have the cost of the advertisement for one insertion. Multiply this by the total number of insertions desired and you will have the total cost. This rate is so low that we cannot charge classified accounts, and would, therefore, appreciate a remittance with order. No advertisement accepted for less than 50 cents.

MISCELLANEOUS

DUSTER—Niagara, Air-Cooled engine Steel truck-mounted. Nearly new. Half price. Samuel Kidder, Monticello, Fla.

SEEDS—ROUGH LEMON, SOUR ORANGE, CLEOPATRA. Pure, fresh, good germination. Also seedlings lineout size. De Soto Nurseries, DeSoto City, Fla.

FANCY ABAKKA pineapple plants. R. A. Saeger, Ankon, Florida.

HIGH BLOOD PRESSURE easily, inexpensively overcome, without drugs. Send address. Dr. J. B. Stokes, Mohawk, Fla.

CROTALARIA SPECTABILIS—Seed for sale. New crop, well cured, bright and clean. Price 25c per pound in 100 pound lots and over, 30c per pound in less quantities. f. o. b. Hastings, Bunnell, Lowell and San Antonio, Florida. F. M. LEONARD & COMPANY, Hastings, Florida.

SCENIC HIGHWAY NURSERIES has a large stock of early and late grapefruit and oranges. One, two and three year buds. This nursery has been operated since 1883 by G. H. Gibbons, Waverly, Fla.

RAISE PIGEONS—Profit and pleasure. Illustrated descriptive catalogue postage six cents. Vrana Farms, Box 314a, Clayton, Missouri.

ORANGE PACKERS ATTENTION—Two chemical transparent flexible orange coating processes for sale; royalty or license basis. Patent pending. Dr. C. V. Berry, 251 West 111th Street, New York City.

PUREBRED PULLETS FOR SALE—White Leghorns and Anconas ready to ship. Barred Rocks and R. I. Reds shortly. Several hundred yearling White Leghorn hens now laying 70%. Write or wire for prices. C. A. Norman, Dr. 1440, Knoxville, Tenn.

LAREDO SOY BEANS, considered free from nematode, excellent for hay and soil improvement. Write the Baldwin County Seed Growers Association, Loxley, Alabama, for prices.

WANTED—RESIDENT SOLICITORS

to contact Grape Fruit & Orange packers & shippers, for one of the oldest receivers and Auction Specialists in New York. Address "C.B." P. O. Box 415, Tampa, Florida.

HARDY AUSTRALIAN PINE (Casuarina Cunninghamiana)—Best windbreak; border and avenue trees, rapid growth, invaluable for landscaping estates, parks, etc. Guaranteed true strain 20, 25 and 30c each. Quantity discount ten percent. May is good month for planting. Griffing Nurseries, Biscayne Park, Miami, Fla.

WANTED—To hear from owner of land for sale. O. Hawley, Baldwin, Wis.

SATSUMA BUDWOOD from Bearing Trees. Hills Fruit Farm, Panama City, Fla.

ECONOMIC FACTORS OF IMPORTANCE TO CITRUS INDUSTRY ESPECIALLY REFERRING TO PRODUCTION COSTS

(Continued from page 19.)

had a total acre cost approximately double the similar figure for the 10 low yield groves, the cost per box was about 4½ times greater in the low yield than in the high yield groves. On the other hand, the returns per box were slightly higher for the low yield groves.

The first question that arises, as the effect of yield on net returns is examined, is the cause of these great differences in yield. There are two very obvious reasons when the individual groves are examined. In the first place, only 25.7 percent of the trees in the high yield group were under 17 years of age, compared with 94.6 percent of the trees in the low yield group. In the second place, 26.6 percent of the trees in the low yield

WANTED—To hear from owner having good farm for sale. Cash price, particulars, John Black, Chippewa Falls, Wisconsin.

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group were grapefruit. The records were not kept in sufficient detail to separate the costs by age and kind of trees. Other desirable separations of costs would be by variety of fruit, type of soil and kind of root stock. It is also essential to record quantitative data, such as HOURS of labor, POUNDS of fertilizer, etc. These quantitative data are of more value than the dollar figures for making comparisons over a period of years, especially during periods of rapid price changes. KINDS of fertilizers and other materials used should also be recorded.

Although the cost of production phase is the one over which the grower has the greatest control, it has probably been given the least attention and study. The Economics Department of the College of Agriculture are preparing to put more emphasis on this type of work, but will be helpless without the full cooperation of interested growers. It is the hope that real progress in this line of work may be reported to this body from year to year.

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